

## **Defining Optimum Seeding Date for Bermudagrass and Zoysiagrass Fairways**

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### **Objective**

The objective of this project is to identify optimum and acceptable seeding dates for seeded bermudagrass (*Cynodon dactylon*) and zoysiagrass (*Zoysia japonica*). Determining optimum and acceptable seeding dates, in this case, is based on rate of establishment and winter survival.

### **Rationale**

Zoysia or bermudagrass fairways require less inputs than do most cool season fairway turfs, and thus are less expensive but more environmentally friendly to maintain. These grasses require less fungicide, insecticide, herbicide, fertilizer, and irrigation inputs than the cool season grasses currently used in the transition zone. Bermudagrass and zoysiagrass are traditionally established vegetatively at costs up to \$15,000/A. The newly available seeded bermudagrass and zoysiagrass can be established for as little as \$1000/A. Seeded cultivars will allow many more golf courses, from high budget to low budget, to utilize warm season grasses for their fairways and/or tees. Before seeded bermudagrass and zoysiagrass can be used on golf courses, establishment and management strategies must be better understood. First and foremost is determining the optimum, as well as the range of acceptable seeding dates.

### **How It Was Done**

The experiment was conducted in 2000 and 2001 at the W.H Daniel Turfgrass Research and Diagnostic Center, West Lafayette, IN. Additionally, Dr. David Williams from the University of Kentucky is collaborating on this project performing almost identical projects in Lexington. The experimental area was fumigated in Apr 2000 and Apr 2001 with methyl bromide to minimize competition from annual grasses and broadleaf weeds that would complicate data measurement. The area was then smoothed and leveled to prepare the seedbed. 'Mirage' bermudagrass was seeded at 0.5 lbs PLS/1000 ft<sup>2</sup> and 'Zenith' zoysiagrass at 1.0 lbs PLS/1000 ft<sup>2</sup> on 1 and 15 June, 1 and 15 July, and 1 and 15 Aug, and 1 Sep. An additional seeding date of 15 May was included in the 2001 study. Seeded plots received 1.0 lb N/1000 ft<sup>2</sup> with urea every two weeks after seeding. The experimental area was irrigated as needed to encourage germination and establishment, and mowed at 1.0 inch as needed. Percent cover of zoysia and bermudagrass was recorded every two weeks during the initial growing season. Winter survival was recorded in spring 2001 and will be again in 2002. Results from both University of Kentucky and Purdue University will be combined for refereed publication in 2002.

**Results:**

**Establishment:**

*2000-2001*

As expected, bermudagrass germinated and established much faster than zoysiagrass. By the final data recording in October, bermudagrass seeded between 1 June and 1 Aug provided greater than 90% cover by 2 Oct (Figure 1). Only zoysiagrass seeded on 1 and 15 June produced greater than 90% cover by 2 Oct. Bermudagrass consistently required only 4 to 6 weeks to reach 90% cover, whereas zoysiagrass took 10 weeks or more to reach 90% cover. Slow germination of zoysiagrass may enhance weed populations compared to the faster-germinating bermudagrass, but fumigation virtually eliminated weed pressure on our site.

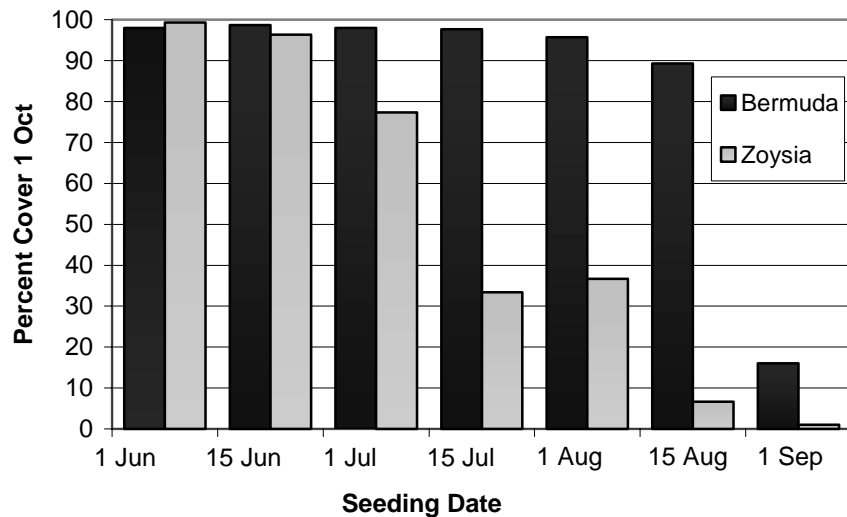
*2001-2002*

Results from 2001 were similar to those from 2000. Bermudagrass seeded between 15 May and 1 Aug. provided greater than 90% cover by 1 Oct. (Figure 2). Only zoysiagrass seeded before 15 June produced greater than 90% cover by 1 Oct. Winter survival data will be recorded next July.

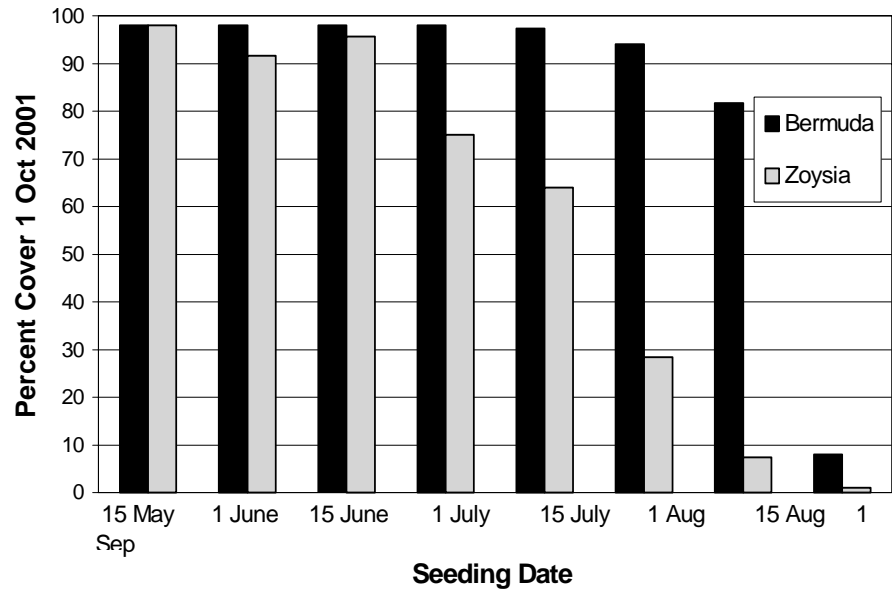
**Winter performance**

*2000-2001*

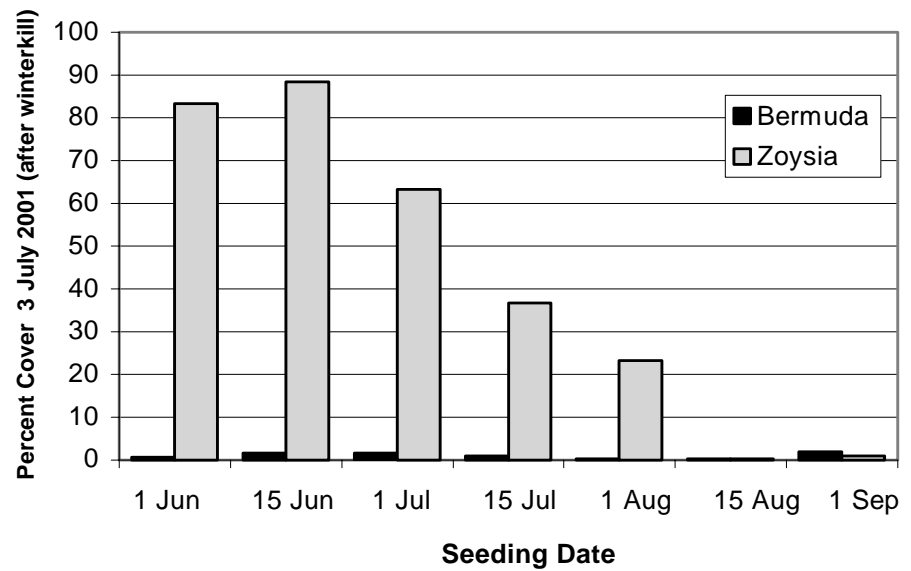
The winter of 2000-2001 was difficult for warm season and cool season grasses in Indiana. Virtually no bermudagrass survived the winter regardless of seeding date (Figure 3). There was slight reduction of zoysiagrass cover after the winter, but original seeding date did not affect extent of damage.



**Figure 1.** Oct. 1 cover of zoysia and bermudagrass when seeded throughout the summer of 2000.



**Figure 2.** Oct. 1 cover of zoysia and bermudagrass when seeded throughout the summer of 2001.



**Figure 3.** Cover on July 3 2001 of zoysia and bermudagrass when seeded throughout the summer of 2000. Winterkill occurred on all bermudagrass regardless of seeding date.